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(71) Applicant: TOSHIBA CORP

(72) Inventor: KURIHARA KAZUAKI
SEKINE MAKOTO
OKUMURA KATSUYA

(74) Representative:

(54) SEMICONDUCTOR MANUFACTURING EQUIPMENT

(57) Abstract:

PROBLEM TO BE SOLVED: To enhance usage efficiency of process gas under a decompressed atmosphere of an etching device, etc., and reduce production cost by a method wherein the process gas is supplied to the interior of a vacuum bath for discharging the inside and decompressing and a part of exhaust gas is recirculated from the exhaust side to the interior of the vacuum bath.

SOLUTION: A nozzle incorporated into an anode electrode 103 in a vacuum bath 101 is connected to a gas bomb 111 being a supply source of process gas, and the exhaust side 105a of a turbo-molecule pump connecting with the vacuum bath 101 is connected with a dry pump 106. Further, in the intermediate side of a

recirculation line 107 provided between the exhaust side 105a of the turbo-molecule pump and the vacuum bath 101, a valve 108 and a filter 113 are disposed. A part of the process gas discharged by a turbo-molecule pump 105 from inside of the vacuum bath 101 is returned to the vacuum bath 101 through the recirculation line 107. A ratio of this process gas recirculated is adjusted by the degree of opening of the valve 108.

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